

**SERVICE MANUAL**  
**SKID STEERS**  
85XT  
90XT  
95XT

---

7-52254

1. Trim along dashed line.
2. Slide into pocket on Binder Spine.

TYPE 1-4

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TYPE 1-4

# 85XT/90XT/95XT Skid Steers

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**NOTE:** Case, LLC. reserves the right to make improvements in design or changes in specifications at any time without incurring any obligation to install them on units previously sold.

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Loctite Product Chart

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# Section 1001

## STANDARD TORQUE SPECIFICATIONS

85XT - 90XT - 95XT

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## TORQUE SPECIFICATIONS - DECIMAL HARDWARE

Use the torques in this chart when special torques are not given. These torques apply to fasteners with both UNC and UNF threads as received from suppliers dry, or when lubricated with engine oil. Not applicable if special graphities, Molydisulfide greases, or other extreme pressure lubricants are used.

Grade 5 Bolts, Nuts, and Studs		
		
Size	Newton metres	Pound-Inches
1/4 inch	10 to 12	91 to 103
5/16 inch	21 to 24	188 to 212
3/8 inch	38 to 43	336 to 378
		Pound-Feet
7/16 inch	61 to 69	45 to 51
1/2 inch	94 to 104	68 to 76
9/16 inch	132 to 149	98 to 110
5/8 inch	183 to 210	138 to 155
3/4 inch	325 to 370	242 to 270
7/8 inch	530 to 595	390 to 435
1.0 inch	790 to 890	585 to 655
1-1/8 inch	980 to 1100	725 to 805
1-1/4 inch	1385 to 1555	1020 to 1145
1-3/8 inch	1810 to 2030	1335 to 1495
1-1/2 inch	2400 to 2700	1770 to 1990


Grade 8 Bolts, Nuts, and Studs		
		
Size	Newton metres	Pound-Inches
1/4 inch	15 to 16	130 to 145
5/16 inch	30 to 34	268 to 301
3/8 inch	54 to 60	474 to 534
		Pound-Feet
7/16 inch	86 to 97	63 to 71
1/2 inch	132 to 149	96 to 110
9/16 inch	191 to 213	140 to 155
5/8 inch	260 to 293	190 to 215
3/4 inch	480 to 515	340 to 380
7/8 inch	745 to 835	550 to 615
1.0 inch	1120 to 1280	825 to 925
1-1/8 inch	1585 to 1785	1170 to 1315
1-1/4 inch	2215 to 2235	1650 to 1855
1-3/8 inch	2930 to 3295	2160 to 2430
1-1/2 inch	3895 to 4375	2870 to 3225


**NOTE:** Use thick nuts with Grade 8 bolts.

## TORQUE SPECIFICATIONS - METRIC HARDWARE

Use the following torques when specifications are not given.

These values apply to fasteners with both coarse and fine threads as received from supplier, plated or unplated, or when lubricated with engine oil. These values do not apply if graphite or Molydisulfide grease or oil is used. Use of a click type torque wrench, or better is required.

Grade 8.8 Bolts, Nuts, and Studs		
		
Size	Newton metres	Pound-Inches
M4	3 to 4	31 to 35
M5	5 to 6	49 to 55
M6	10 to 11	84 to 94
M8	23 to 26	229 to 277
M10	46 to 51	408 to 460
		Pound-Feet
M12	80 to 90	59 to 66
M14	128 to 145	94 to 106
M16	200 to 220	149 to 161
M20	400 to 450	293 to 330
M24	690 to 780	510 to 575
M30	1375 to 1545	1010 to 1140
M36	2400 to 2700	1770 to 1990

Grade 10.9 Bolts, Nuts, and Studs		
		
Size	Newton metres	Pound-Inches
M4	5 to 6	44 to 49
M5	8 to 9	71 to 79
M6	14 to 15	120 to 136
M8	33 to 37	293 to 329
		Pound-Feet
M10	65 to 74	48 to 54
M12	114 to 128	85 to 94
M14	183 to 205	136 to 153
M16	285 to 320	208 to 235
M20	555 to 620	406 to 460
M24	955 to 1075	705 to 790
M30	1900 to 2140	1400 to 1580
M36	3315 to 3730	2445 to 2750

## Grade 12.9 Bolts, Nuts, and Studs



Usually the torque values specified for grade 10.9 fasteners can be used satisfactorily on grade 12.9 fasteners.

# Section 2000

## ENGINE REMOVAL AND INSTALLATION

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## REMOVAL

**NOTE:** The photos in this procedure are for reference only.

### STEP 1

Park the machine on a level surface. Remove the bucket or attachment from the loader arms. Raise the loader arms and lock the loader arms into the raised position. Tilt the cab forward.

### STEP 2

Turn the ignition switch and the master disconnect switch (if equipped) to the OFF position.

### STEP 3

Disconnect the negative battery cable from the battery.

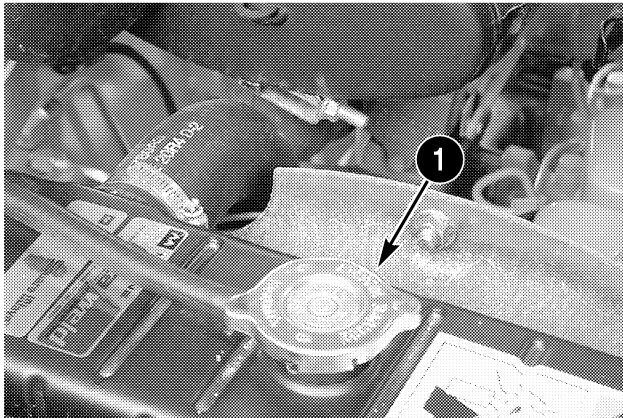
### STEP 4

Open the rear access door on the machine.

### STEP 5

Open the hood.

### STEP 6

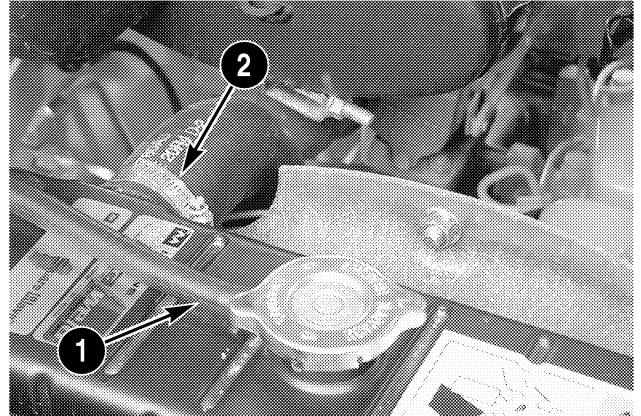


BD99E028

Slowly loosen the radiator cap (1). Install a hose on the drain valve and drain the radiator into a clean container that holds approximately 19 litres (5 gallons).

**NOTE:** During installation, fill the radiator and coolant reservoir completely. See Section 1002 for coolant specifications. Start and run the engine until the coolant is at operating temperature. Stop the engine and check for leakage. When the coolant is cold, check the coolant reservoir level. Add coolant as required.

### STEP 7



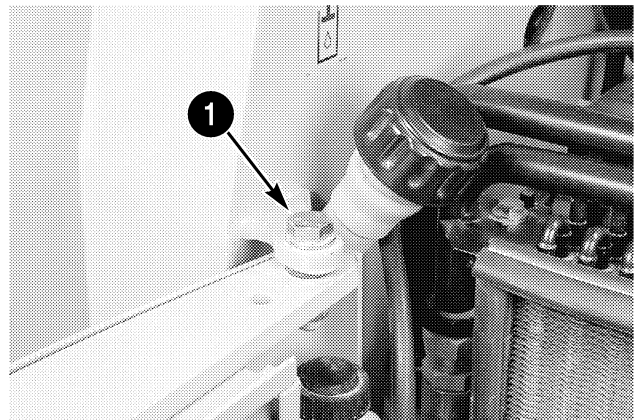
BD99E028

Disconnect the overflow hose (1) from the radiator neck.

### STEP 8

Connect acceptable lifting equipment to the rear access door.

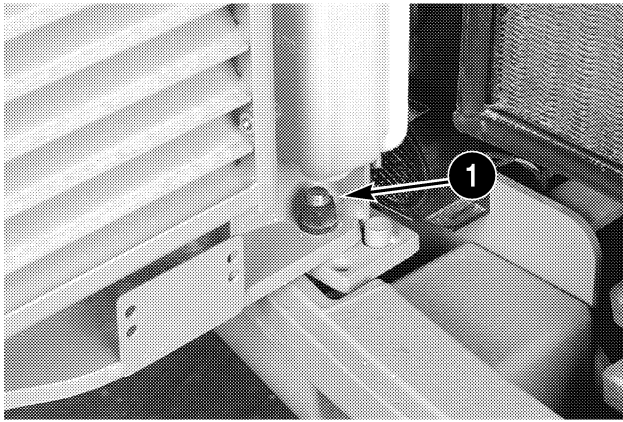
### STEP 9



BD99E040

Loosen and remove the hardware (1) that fastens the top of the door to the frame.

### STEP 10



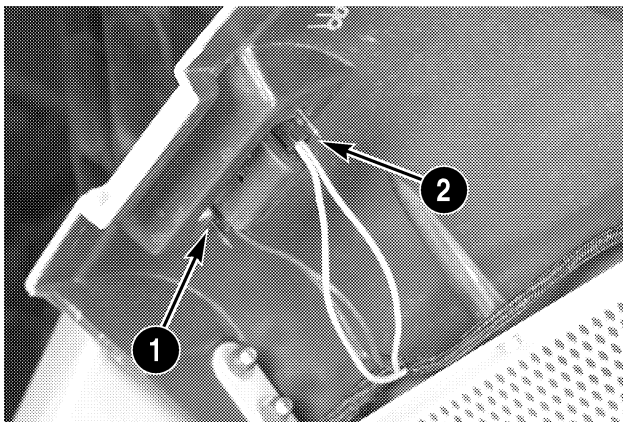
BD99E042

Loosen and remove the hardware (1) that fastens the bottom of the door to the frame.

### STEP 11

If the machine is equipped with a high flow high pressure system. Place acceptable lifting equipment under the rear bumper. Loosen and remove the mounting hardware. Lower the bumper and remove the bumper from the machine.

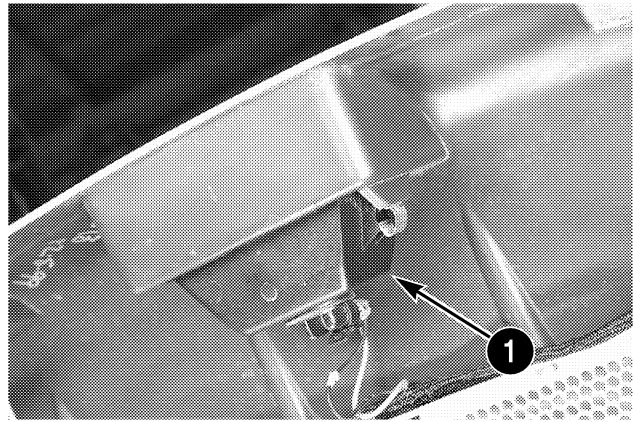
### STEP 12



BD99E038

Disconnect the electrical connectors (1 and 2) from the rear tail lamps on both sides of the hood.

### STEP 13



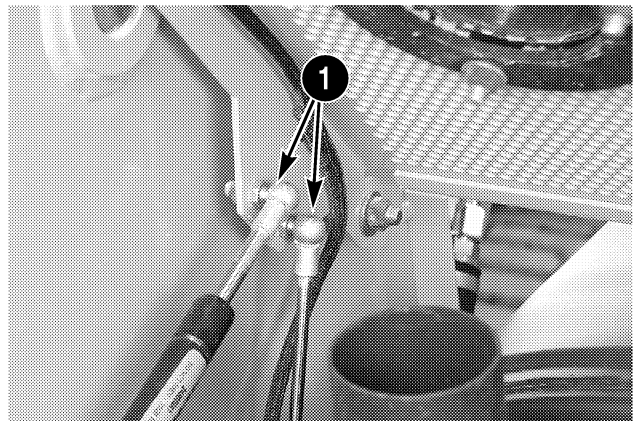
BD99E039

Disconnect the rear work lamp (1) from the hood.

### STEP 14

Remove the electric harness and rear work lamp from the hood. Put the electrical harness and rear work lamp out of the way.

### STEP 15



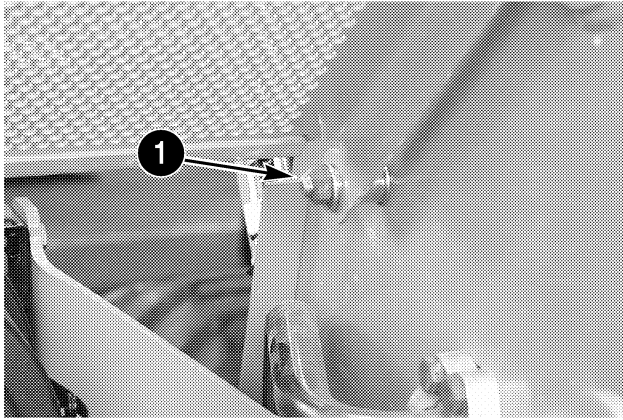
BD99E029

Disconnect the clip from the ball joint at the hood end of the cylinder (1). Remove the cylinder from the ball joint.

### STEP 16

Count the number of washers on each side of the hood. Make a record of the number and location of the washers for use during assembly.

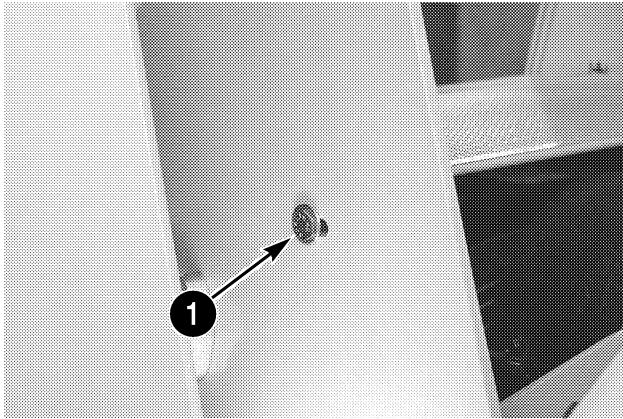
**STEP 17**



BD99E035

Loosen and remove the lock nuts and washers from the studs (1) on each side of the hood.

**STEP 18**



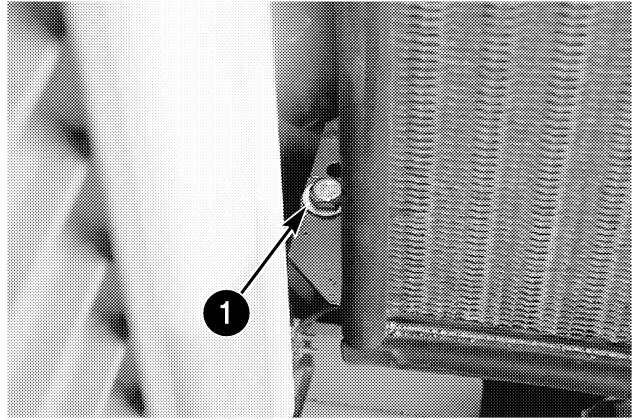
BD99E045

Loosen and remove the stud (1) and hardware from one side of the hood.

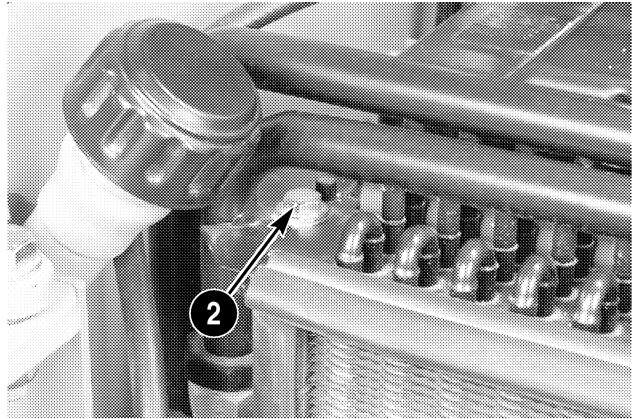
**STEP 19**

Remove the hood from the stud on the other side of the machine. Remove the hood from the machine.

**STEP 20**



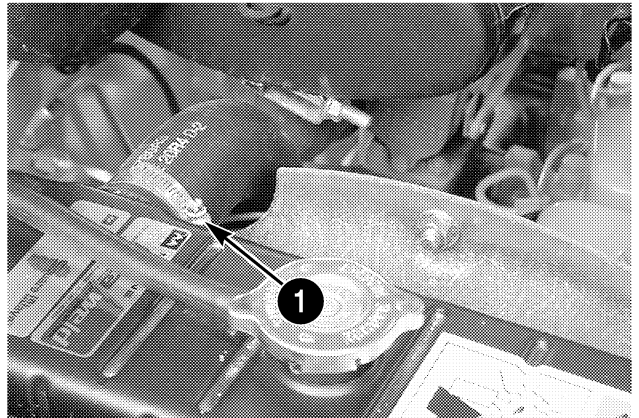
BD99E043



BD99E041

Loosen and remove the hardware that fastens the oil cooler to the radiator (1 and 2). Remove the oil cooler from the radiator and move the oil cooler out of the way. Be careful not to damage the oil cooler.

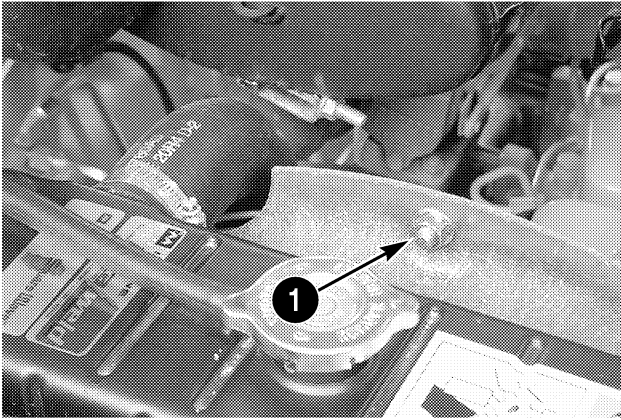
**STEP 21**



BD99E028

Loosen the hose clamps (1) on the upper and lower radiator hoses.

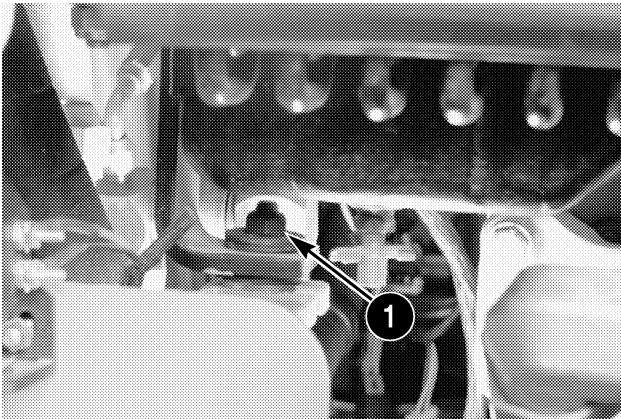
**STEP 22**



BD99E028

Loosen and remove the cap screws, washers, and lock nuts that fasten the fan guard to the radiator shroud. Remove the fan guard from the machine.

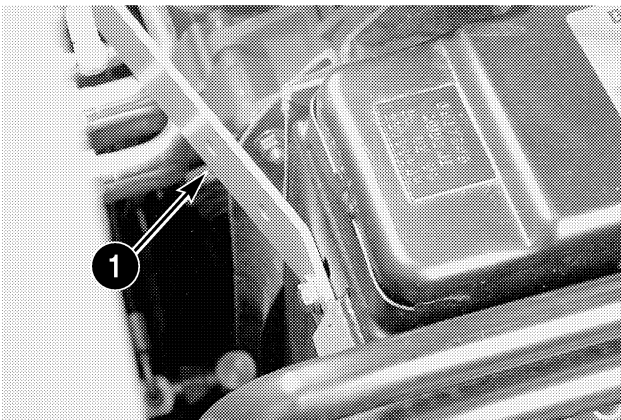
**STEP 23**



BD99E044

Loosen and remove the hardware (1) that fastens the bottom of the radiator to the frame.

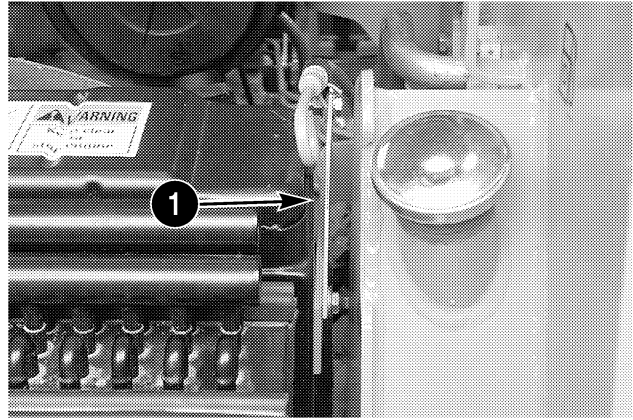
**STEP 24**



BD99E036

Loosen and remove the hardware and bracket that fasten the left side of the radiator to the frame.

**STEP 25**



BD99E034

Loosen and remove the hardware and bracket (1) that fasten the right side of the radiator to the engine oil dipstick tube and the frame.

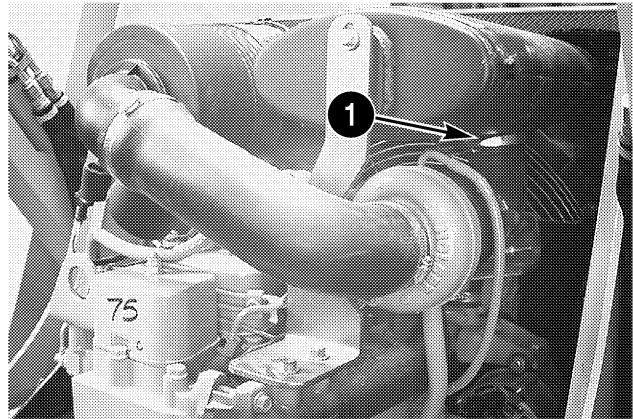
**STEP 26**

Move the radiator away from the upper and lower radiator hoses. Remove the radiator from the machine.

**STEP 27**

Remove the guard and fan blade from the engine.

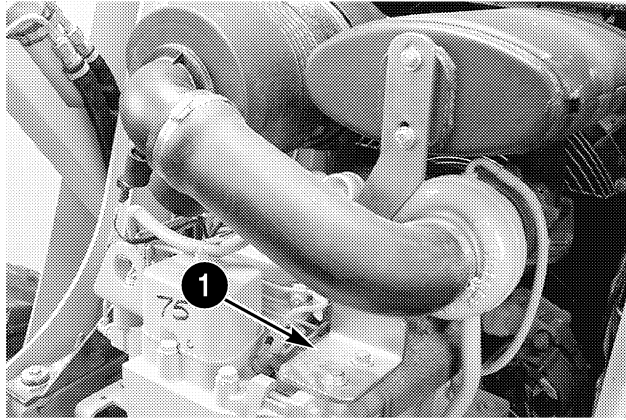
**STEP 28**



BD99E024

Loosen the clamp on the muffler intake.

**STEP 29**

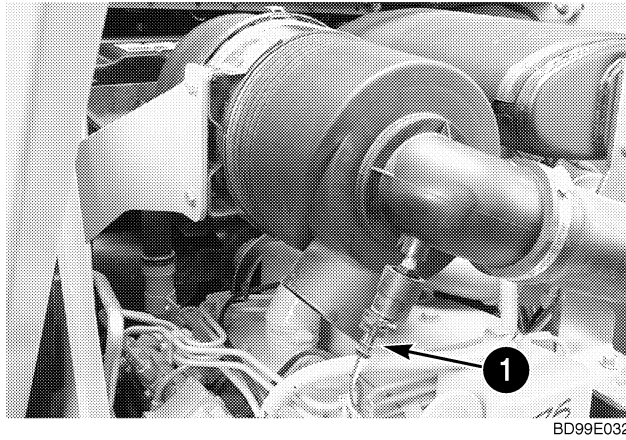


Loosen and remove the cap screws that fasten the muffler mounting bracket (1) to the exhaust manifold.

**STEP 30**

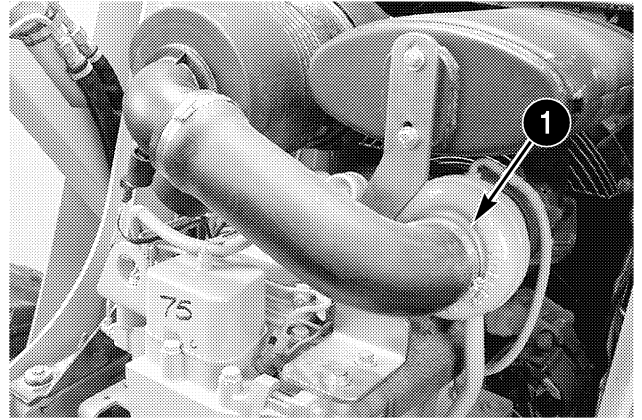
Remove the muffler from the machine.

**STEP 31**



Disconnect the electrical connector (1) from the air filter restriction indicator switch.

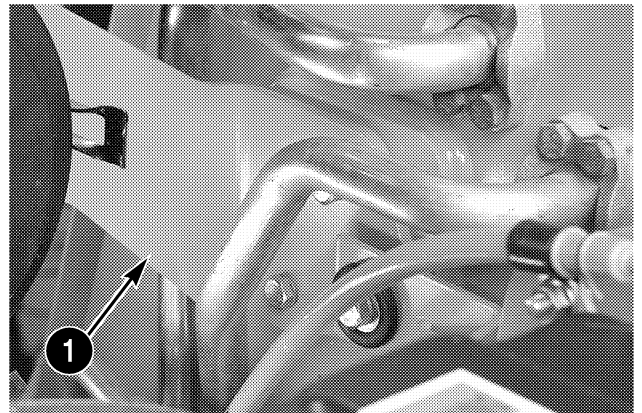
**STEP 32**



Loosen the hose clamp (1). Loosen the hose on the turbocharger.

**NOTE:** The following step shows removing the mounting bracket for the air cleaner. On the 85XT and 95XT make sure not to remove the hardware for the loader arm locking pin.

**STEP 33**



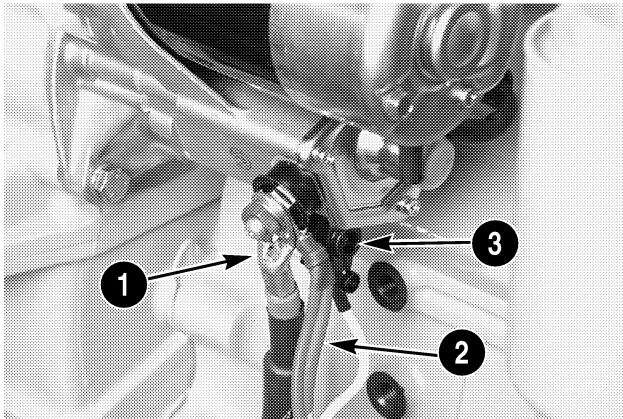
Loosen and remove the cap screws that fasten the air cleaner mounting bracket (1) to the frame.

**STEP 34**

Remove the air cleaner, mounting bracket, and hose from the machine.

**NOTE:** Fasten identification tags to the wires as they are removed from the engine for use during installation.

### STEP 35

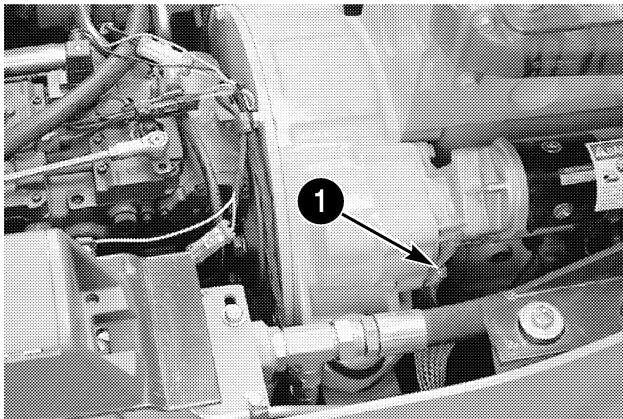


BD99E019

Disconnect the cable (1) and wires (2 and 3) from the starter solenoid.

**NOTE:** During assembly, after wire (3) is connected to the starter solenoid apply a small amount of RTV to the screw head and then close the cover on the screw.

### STEP 36



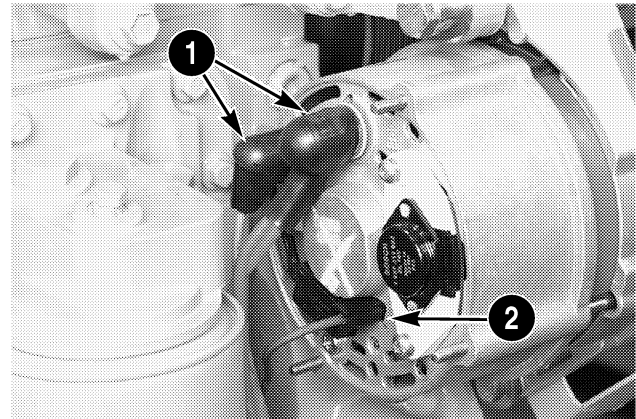
BD99E031

Find the ground strap from the starter mounting bolt to the machine frame. Loosen and remove the starter mounting bolt and washer that holds the ground strap. Remove the ground strap from the bolt. Install the washer and starter mounting bolt.

### STEP 37

Find the ground wires on the side of the engine. Loosen and remove the cap screws that fastens the ground wires to the engine. Keep all ground wires together.

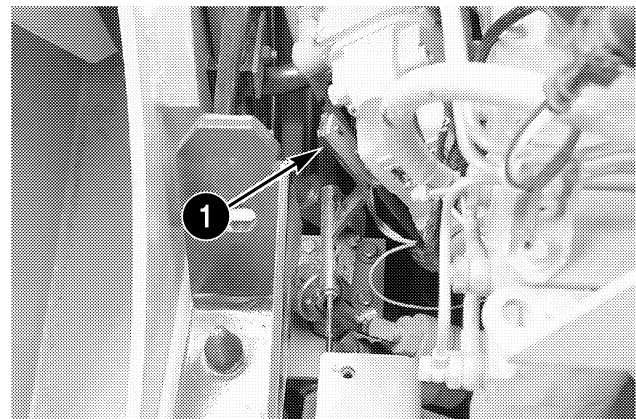
### STEP 38



BD99E017

Disconnect the wires (1 and 2) from the alternator.

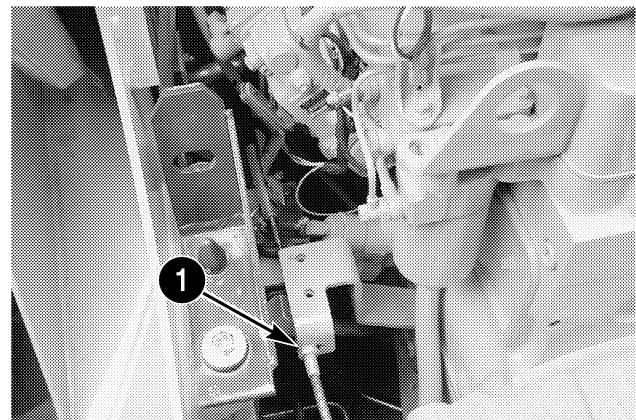
### STEP 39



BD99E033

Loosen and remove the two cap screws and lock washers that fasten the throttle linkage bracket (1) to the fuel injection pump.

### STEP 40



BD99E031

Loosen the jam nut (1) on the throttle cable mounting bracket. Remove the throttle cable from the mounting bracket. Move the throttle cable out of the way.

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**STEP 41**

Disconnect the wire connector from the engine coolant temperature switch.

**STEP 42**

Disconnect the wire connector for the fuel injection pump solenoid.

**STEP 43**

Disconnect the electrical connector for the fuel injection pump solenoid.

**STEP 44**

Loosen and remove the cap screw that fastens the wiring harness to the right side of the engine.

**STEP 45**

Remove all tie straps that fasten the engine harness to the engine. Make a record of the location for use during installation.

**STEP 46**

Move the wiring harness out of the way.

**STEP 47**

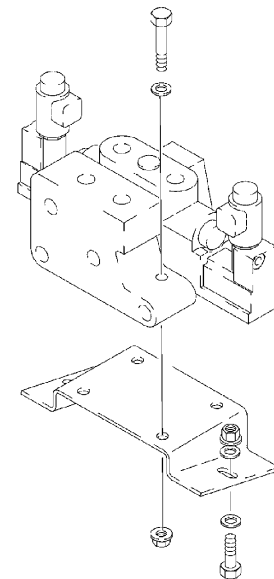
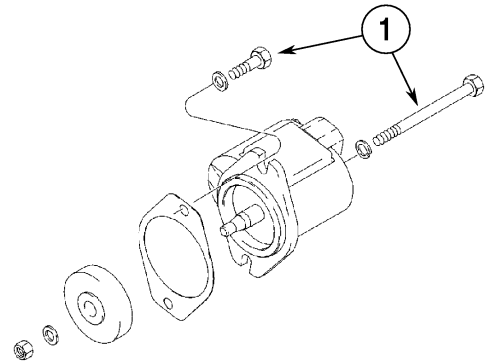
Disconnect the fuel lines from the engine.

- A. Loosen the clamp on the fuel line at the fuel injection pump.
- B. Pull the hose from the fitting.
- C. Install a bolt in the fuel line to keep the fuel in the line.
- D. Repeat steps A, B, and C for the fuel line on the hand pump.

**STEP 48**

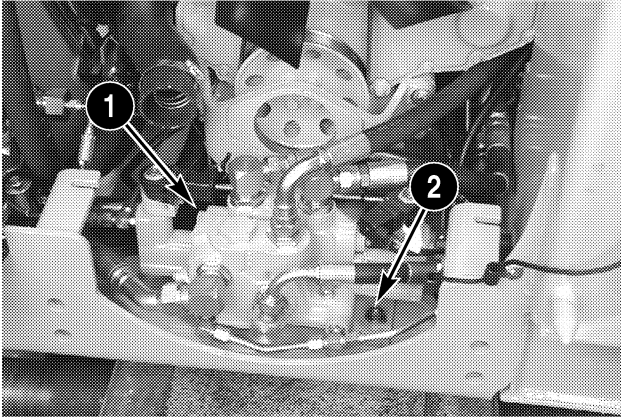
If the machine is equipped with a high pressure gear pump and control valve:

- A. Find the gear pump mounted on the timing gear cover. Loosen and remove the bolts (1) that fasten the high pressure gear pump to the timing gear cover. Remove the gear pump from the timing gear cover. Fasten the gear pump out of the way.



BS99G156

- B. Locate the high flow control valve (1). Find the cap screws that fasten the mounting bracket for the high flow control valve to the frame. Loosen and remove the bolts, washers and self-locking nuts (2). Move the high flow control valve toward the rear of the machine and out of the way.

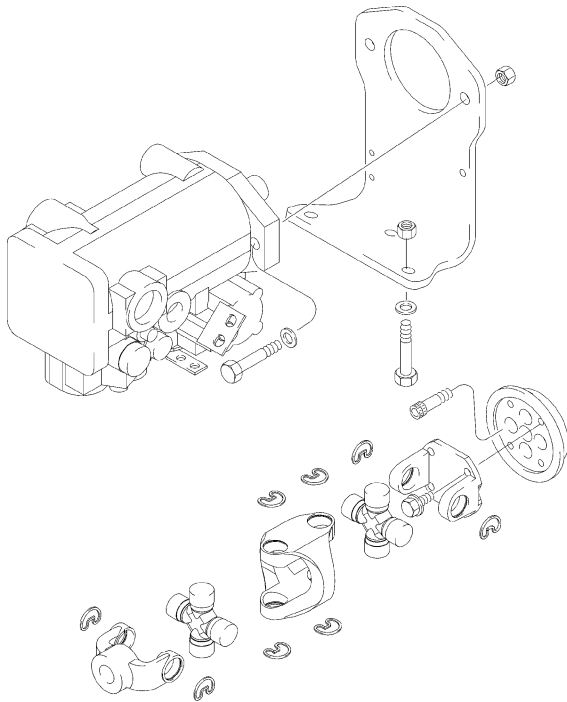


BD99E021

**STEP 49**

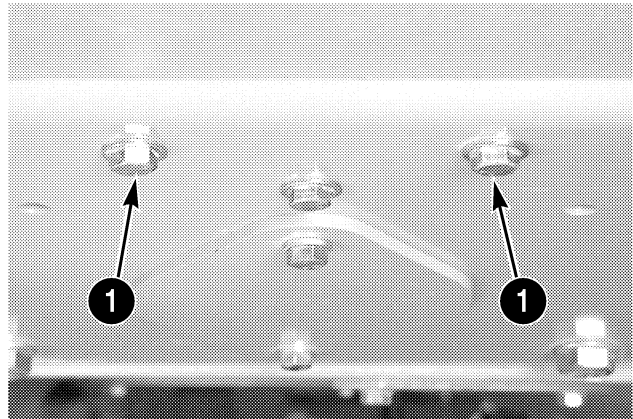
If the machine is equipped with a high pressure piston pump:

- A. Find the high pressure piston pump mounted on the rear of the engine.



BS99G157

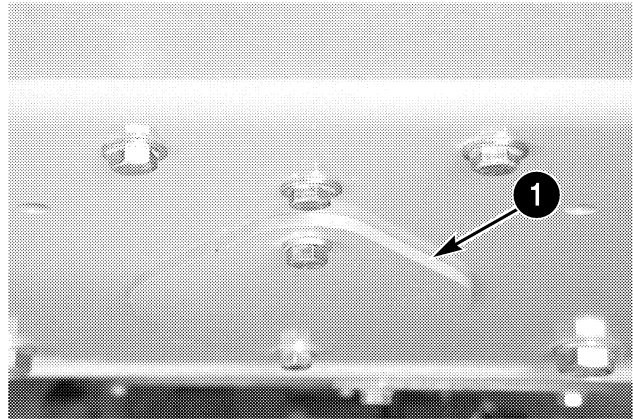
- B. Loosen and remove the bolts (1), washers, and self-locking nuts that fasten mounting bracket for the piston pump to the frame.



BD99E046

- C. Move the piston pump away from the engine until the splined shaft on the piston pump disengages the coupling. Fasten the piston pump out of the way.

**STEP 50**



BD99E046

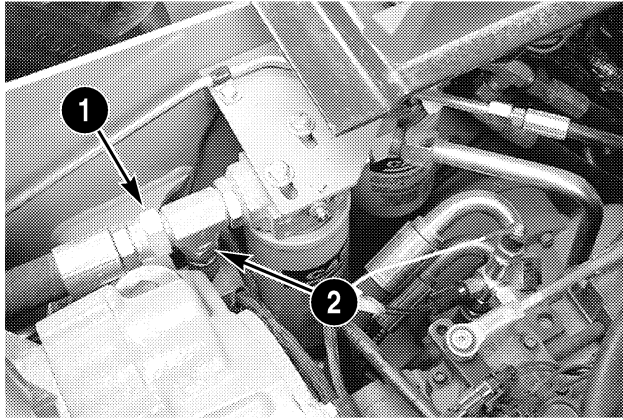
Loosen and remove the cap screws and washers that fasten the cover plate to the frame. Remove the cover plate (1) for access to the rear motor mount.

**STEP 51**

Connect lifting equipment capable of lifting 272 kg (600 pounds) to the lifting eyes on the engine.

**NOTE:** Clean the hydraulic filter and the area around the hydraulic filter. Install caps and/or plugs in all fittings that are disconnected.

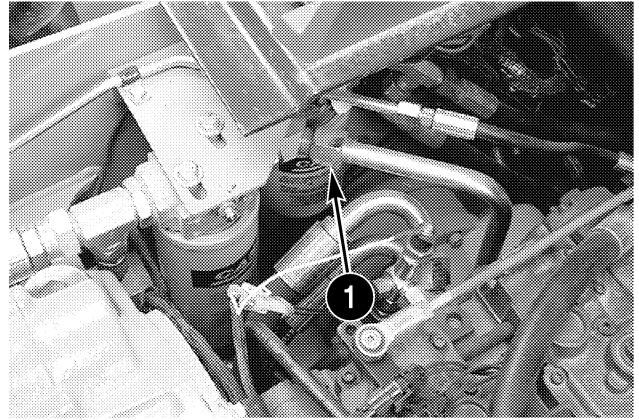
**STEP 52**



BD99E030

Disconnect the hoses (1 and 2) from the fitting on the hydraulic filter.

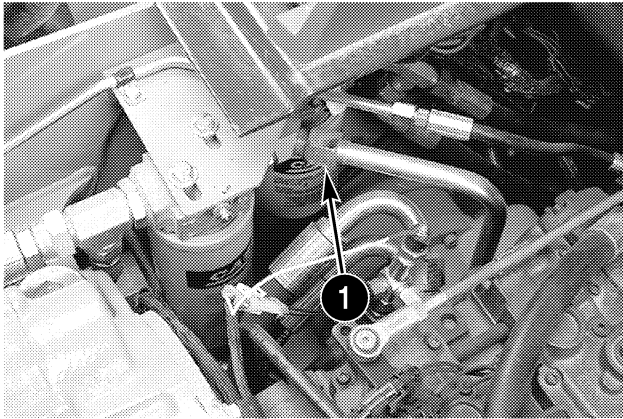
**STEP 55**



BD99E030

Remove the tube (1) from the fitting on the hydraulic filter.

**STEP 53**



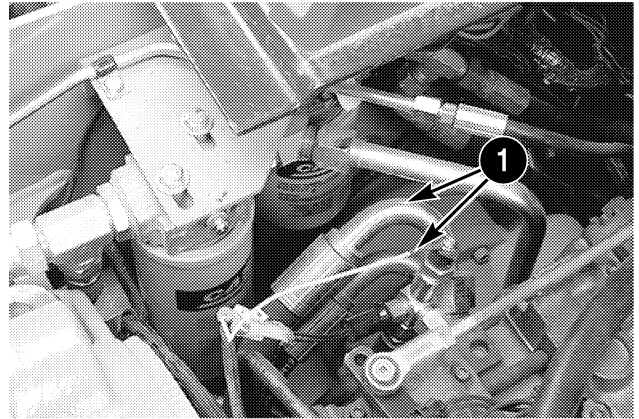
BD99E030

Disconnect the tube (1) from the fitting on the hydraulic filter.

**STEP 56**

Remove the hydraulic filter assembly.

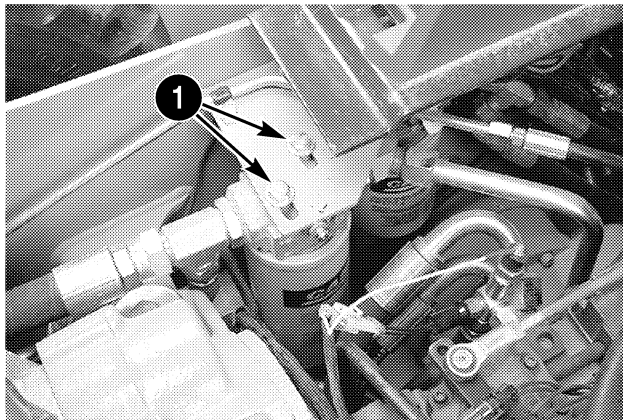
**STEP 57**



BD99E030

Disconnect the hydraulic lines (1) shown from the left side of the tandem pump.

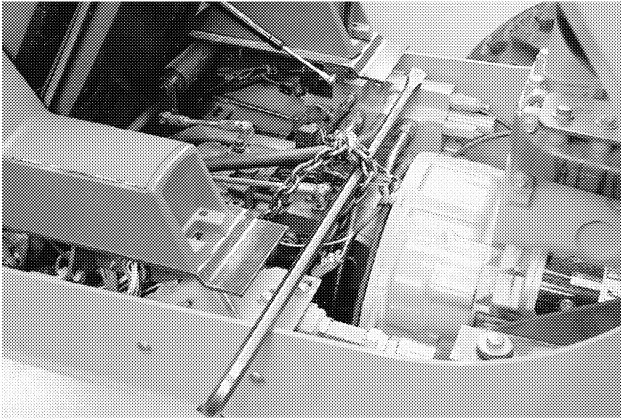
**STEP 54**



BD99E030

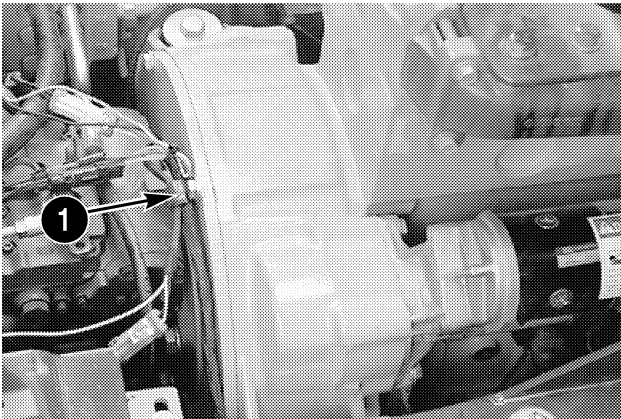
Loosen and remove the cap screws (1) and flat washers that fasten the hydraulic filter head to the mounting bracket.

### STEP 58



Connect equipment to the tandem pump that will hold the tandem pump in position when the engine is removed.

### STEP 59



Loosen and remove the cap screw (1) and washer that fastens the clamp and wiring harness to the tandem pump mounting plate. Move the wiring harness out of the way. Remove the five remaining cap screws and washers that fasten the tandem pump mounting plate to the engine.

### STEP 60

Move the engine away from the tandem pump mounting plate until the splined shaft on the tandem pump disengages the coupling.

**NOTE:** *During assembly apply anti-seize compound to the splined shaft on the tandem pump before engaging the splined shaft in the coupling.*

### STEP 61

Remove the engine from the machine.

## INSTALLATION

### STEP 62

Installation of the engine is the reverse of removal.